

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP03/07407

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C12N15/09, 1/21, C12P17/18// (C12N1/21, C12R1:465)
(C12P17/18, C12R1:465)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ C12N15/00-15/90, 1/21, C12P17/00-17/18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MEDLINE (STN), BIOSIS/WPI (DIALOG), CA/REGISTRY (STN), JSTPlus (JOIS)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
$\frac{X}{A}$	WO 93/18779 A1 (MERCK & CO., INC.), 30 September, 1993 (30.09.93), & US 5312753 A & EP 637244 A1	$\frac{1, 3}{2, 4-15}$
$\frac{X}{Y}$	NAKAGAWA, K. et al., MICROBIAL CONVERSION OF MILBEMYCINS: HYDROXYLATION OF MILBEMYCIN A ₄ AND RELATED COMPOUNDS BY Cunninghamella echinulata ATCC 9244. J.Antibiot., 1991, Vol.44, No.2, pages 232 to 240	$\frac{1, 3}{1-15}$
Y	CARTER G.T. et al., LL-F28249 ANTIBIOTIC COMPLEX: A NEW FAMILY OF ANTIPARASITIC MACROCYCLIC LACTONES. ISOLATION, CHARACTERIZATION AND STRUCTURES OF LL-F28249 α , β , γ , λ . J.Antibiot., 1988, vol.41, No.4, pages 519 to 529	1-15

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Date of the actual completion of the international search 04 July, 2003 (04.07.03)	Date of mailing of the international search report 22 July, 2003 (22.07.03)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Haruo IKEDA et al., "Combinatorial Biosynthesis -Polyketide Kgo butsu o Rei to shite-", Protein, Nucleic acid and Enzyme, Vol.43, No.9, (1998), pages 1265 to 1277	1-15
Y	Haruo IKEDA et al., "Metabolic Engineering no Tenkai-1 Biseibutsu 2ji Taisha Sanbutsu Seigosei no Kinoteki Kakuhen ni yoru Yuyo Bushitsu no Sangyo", Kagaku to Seibutsu, Vol.34, No.11, (1996), pages 761 to 771	1-15
Y	Haruo IKEDA et al., "Series Taisha Kogaku/Seigosei Kogaku (4) Seigosei (2) Hosenkin Polyketude Segosei Idenshi no Kaiseki to sono Oyo", Bioscience & industry, Vol.59, No.8, (2001), pages 530 to 533	1-15
Y	JP 2003-33188 A (Kyowa Hakko Kogyo Co., Ltd.), 04 February, 2003 (04.02.03), (Family: none)	1-15
Y	MACNEIL D.J. et al., A Comparison of the Genes Encoding the Polyketide Synthases for Avermectin, Erythromycin, and Nemadectin. Ind.Microorg.(Edited by BALTZ R.H. et al.), 1993, pages 245 to 256	1-15
A	SHIH T.L. et al., SYNTHESIS OF AN AVERMECTIN-NEMADECTIN HYBRID. Tetrahedron Lett., 1991, Vo.32, No.30, pages 3663 to 3666	1-15